

## 混合动力汽车车载复合电源参数匹配及其优化

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**摘要** 在分析超级电容的加载对混合动力汽车各动力部件参数影响的基础上, 提出了复合电源合理的布局形式。针对整车对电源功率、能量的要求对复合系统进行参数匹配, 以电源全寿命使用成本最少为目标进行参数优化。对所匹配的结果进行了仿真分析, 结果表明, 复合电源应用于混合动力汽车, 在质量、体积、全寿命使用成本及制动能量回收效能等方面均优于原单一电池。

**关键词** [车辆工程](#); [混合动力汽车](#) [超级电容](#) [复合电源](#) [全寿命使用成本](#)

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## Parameter matching and optimization of on-board synergic electric power supply system of hybrid electric vehicle

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**Abstract** A rational layout of the synergic electric power supply system on board of the hybrid electric vehicle(HEV) was proposed based on the analysis of the effects of the loading of the supercapacitor on the parameters of its power components. The parameter matching was done to meet the demand for the energy and power of the HEV, and the parameters were optimized for the minimization of the lifecycle cost as the objective. The matched results were analyzed by the simulation, strongly suggesting that including the supercapacitor in the HEV does make sense from the perspectives of the mass, the volume, the lifecycle cost, and the efficiency of recovering the braking energy, they are better than those of the HEV with a single electric battery power supply system.

**Key words:** vehicle engineering; hybrid electric vehicle(HEV); supercapacitor; synergic electric power supply system; lifecycle cost

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